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Draft RCRA Tank Assessment Plan
Independent RCRA Certification of the Accelerated Sludge Removal Project Hazardous Waste Storage Tank System

Rocky Flats Plant, Solar Ponds Project

December 3, 1993
ERM-Rocky Mountain, Inc.

DRAFT
ASRP RCRA TANK ASSESSMENT PLAN

INDEPENDENT RCRA CERTIFICATION OF THE ACCELERATED SLUDGE REMOVAL PROJECT HAZARDOUS WASTE STORAGE TANK SYSTEM

EG&G Subcontract # MTS 350370PA3

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1.0 INTRODUCTION

The purpose and objective of the Rocky Flats Accelerated Sludge Removal Project (ASRP) is to expeditiously remove approximately 900,000 gallons of waste materials from the 788 Clarifier and the 207 B South and C Ponds. These waste materials will be transferred via tank trucks to a series of new polyethylene tanks, which will be located inside Tents 3, 4 and 6 on the 750 Pad. Approximately 87 tanks will be purchased from Poly Cal Plastics of French Camp, California.

The Department of Energy (DOE) is required to remove the waste materials from the 788 Clarifier and the 207 B and C Ponds by January 20, 1995. EG&G has developed more aggressive internal goals for completing the transfer of these waste materials. EG&G has scheduled to remove the waste materials from the 207 B South Pond by December 31, 1994 and from the 207 C Pond by March 15, 1994.

DOE is requesting that the Colorado Department of Health (CDH) grant interim status to the polyethylene tanks that will be used for storage on the 750 Pad. DOE will later request a modification of the Rocky Flats Plant Part B permit to include these tanks. The tanks are currently subject to the requirements of Part 265, Subpart J of the Colorado Hazardous Waste Regulations, 6 CCR 1007-3. Section 265.192 requires that owners or operators of new tank systems obtain and submit to CDH a written assessment, reviewed and certified by an independent, qualified registered professional engineer, in accordance with Section 100.12(d) attesting that the tank system has sufficient structural integrity and is acceptable for the storing and treating of hazardous waste.

The assessments of the new polyethylene tanks for storage of the waste materials from the 788 Clarifier and the 207 B South and C Ponds will be performed by ERM-Rocky Mountain (ERM). This document describes the plan that ERM will implement to complete these tank assessments. Section 1.0 provides background information on the ASRP, as well as an explanation of the driving forces behind the requirement for tank assessments. Section 2.0 details the scope of EG&G's and ERM's responsibilities for

completing the project. Section 3.0 describes the methodology that ERM will use to perform the tank assessments, and includes separate discussions of the vendor site visit, the review of the engineering design package and waste characterization data, delivery/installation inspections, and the preparation of the written certifications. Section 4.0 presents the proposed project schedule, along with a list of the key assumptions used in developing the schedule. Finally, Section 5.0 details the quality assurance/quality control procedures ERM will use during the completion of the tank assessments.

2.0 CERTIFICATION SCOPE

ERM has been contracted to prepare a written assessment of the polyethylene tanks to be used for storage of waste materials from the 778 Clarifier and the 207 B South and C Ponds. A qualified, Colorado registered professional engineer with ERM will review and certify the assessment in accordance with Section 100.12(d) of 6 CCR 1007-3, attesting that each tank system has sufficient structural integrity and is acceptable for the storing and treating of hazardous waste as required under Section 265.192 of 6 CCR 1007-3.

ERM will assess the following items prior to preparing the certification:

- Design standards used to construct the tanks and ancillary equipment (265.192(a)(1)).
- Hazardous characteristics of the wastes to be handled (265.192(a)(2)).
- Design considerations used to ensure that tank foundations will maintain the load of a full tank (265.192(a)(5)(i)).
- Design considerations used to ensure that tank systems will be anchored to prevent dislodgement where the tank system is placed in a seismic fault zone (265.192(a)(5)(ii)).
- Design considerations used to ensure that tank systems will withstand the effects of frost heave (265.192(a)(5)(iii)).

- Handling procedures used to prevent tank damage during installation (265.192(b)).
- Tank system integrity after installation through an inspection for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion and other structural damage or inadequate construction or installation (265.192(b)(1-6)).
- Tightness of tanks and ancillary equipment prior to use (265.192(d)).
- Measures used to protect the ancillary equipment from physical damage and excessive stress due to settlement, vibration, expansion or contraction (265.192(e)).

The scope of work for the ASRP tank assessments does not include:

- Assessment of repairs performed on damaged tank vessels, if necessary, prior to enclosure or use of tank systems.
- Review of inspection procedures, operating procedures, or contingency/emergency response procedures.
- Review of tank closure plans.
- Review of training plans.

In order to complete the tank assessments and the certification documentation, ERM will need EG&G to provide the following information:

- Complete design package for the ASRP tank systems.
- Supporting calculations for the design package.
- Plan and elevation views of the ASRP tank systems with dimensions.
- Vendor supplied information, including test data and material specifications.

3.0 METHODOLOGY

ERM will use a phased approach in performing the assessments on the ASRP polyethylene tanks. ERM will first conduct a site visit to Poly Cal Plastic's facility in

French Camp, California to verify tank manufacturing, testing and packaging procedures, and to obtain additional tank data. Concurrently, ERM will begin reviewing existing information, including the ASRP Design Criteria Package and the available waste characterization data. As tanks are received by EG&G at the Rocky Flats Plant, ERM will perform inspections to check for damage to the tanks and to ensure that the proper shipping requirements have been met. During the construction phase of the ASRP, ERM will be present to observe the installation and testing of the tanks.

After the necessary conditions have been met, ERM will prepare written certifications for each tank or group of tanks, in accordance with 6 CCR 1007-3, Section 265.192, using a two-tiered approach. ERM will first complete an initial certification of structural integrity for each tank vessel, to allow EG&G to place each individual tank in service in a timely manner. ERM will then prepare a final certification for all the tank systems and their ancillary equipment. ERM anticipates providing the initial certifications in three groups, consisting of approximately 29 tanks each. Following the completion of the project, ERM will provide a final report, which will include all of the tank assessments.

For each phase of the assessment process: the vendor site visit; the existing information review; and the shipping/installation inspections, ERM has established general screening level criteria. These criteria will enable ERM to quickly determine if the substantive requirements of each portion of the assessment process have been met. The criteria are posed in question form and appear in the text portions of their respective subsections. A "No" response to any of the questions will indicate a significant concern, which ERM will communicate to EG&G immediately. For the "Yes" responses, ERM will use an assessment checklist to investigate the specific requirements associated with the general screening level criteria. For example, as part of the vendor site visit, ERM will verify that hydrostatic testing of the ASRP tanks has been properly completed. If, during the visit, ERM discovered that the testing had not been performed, there would be an immediate and serious concern. If, instead, the testing had been completed, ERM would use the vendor site visit checklist to verify that the testing was conducted in accordance

with the appropriate specifications. The checklists for each criteria are referenced in the applicable subsection and are included in Appendices A, B and C.

To complete the ASRP tank assessments, ERM will use a project team consisting of six engineers. The majority of the field work and engineering calculation checks will be provided by four individuals with the additional two engineers providing support during peak work periods. Two individuals will be sent to California to conduct the vendor site visit. Two teams, each consisting of two engineers, will review the existing information. One team will concentrate on the assessment of structural integrity. This assessment will include a review of tank system design standards, tank thickness and stress calculations, seismic evaluations, performance test results, and overfill, leak detection, secondary containment, spill control designs. The second team will focus on evaluating the compatibility of the tanks with the wastes to be stored. This evaluation will include a review of corrosion calculations, material specifications and chemical-resistance data, waste characteristics and physical properties, and performance test results. The shipping/installation inspections will be performed by ERM engineers. At a minimum, one Colorado registered professional engineer will be present on-site to conduct the installation portion of the inspection. The following subsections describe the specific procedures that ERM will follow to complete the tank assessments.

3.1 Vendor Site Visit

Two engineers from ERM will visit the Poly Cal Plastics manufacturing facility in French Camp, California on December 2-3, 1993. The primary objective of the visit is to determine if Poly Cal Plastics manufactures, tests and packages the ASRP tanks in accordance with the requirements specified in ASTM D 1998-91, "Standard Specification for Polyethylene Upright Storage Tanks", the design basis selected by EG&G. The following general screening level criteria will be used to determine if the vendor has met the substantive requirements associated with the manufacture, test and packaging of the ASRP tanks:

1. Have the ASRP tanks been manufactured in accordance with the requirements of ASTM D 1998-91?

2. Has the Low-Temperature Impact Test been performed for the ASRP tanks?

3. Has the O-Xylene-Insoluble Fraction (Gel) Test been performed for the ASRP tanks?

4. Have the ASRP tanks been visually inspected?

5. Have the ASRP tanks been hydrostatically tested?

If a "No" response is recorded for any of these five questions, ERM will notify EG&G immediately. For the "Yes" responses, ERM will use the Vendor Site Visit Checklist, which is included as Appendix A, to investigate the specific requirements associated with the vendor site visit screening criteria. In addition to verifying compliance with the requirements of ASTM D 1998-91, ERM will also request the following information from Poly Cal Plastics:

- Chemical-resistance charts for the polyethylene material used in the tank fabrication.
- Hydrostatic-hoop-stress data for the resin used in the tanks.
- QA/QC records and procedures for the tank manufacturing, testing and packaging processes.

3.2 Information Review

Review of existing information will involve an evaluation of the design basis, including the ASRP Design Criteria Package, and the available waste characterization data. ERM will use the technical requirements specified in the design standards (e.g. ASTM D 1998-91) and in the Colorado Hazardous Waste Regulations to determine the necessary technical elements for the ASRP tank design. In addition, ERM will also review RFP Standards for Tanks Containing Regulated Substances (SM-136). ERM will then check

the existing engineering data and calculations for accuracy and completeness. ERM will also identify any required technical information which is absent from the design package.

3.2.1 Design Information Review

The review of the existing design information will include the ASRP Design Criteria Package and other relevant technical data such as the ASRP seismic evaluation. These reviews will be conducted in order to verify the adequacy of the engineering design as it relates to the demonstration that the ASRP tank systems have sufficient structural integrity and are acceptable for the storing and treating of hazardous waste. The following general screening level criteria will be used to determine if EG&G has met the substantive requirements associated with the design of the ASRP tanks:

1. Were the ASRP tanks designed in accordance with the requirements of ASTM D 1998-91?

2. Were the ASRP tanks designed in accordance with the requirements of Part 265 Subpart J of the Colorado Hazardous Waste Regulations?

3. Were the ASRP tanks designed to meet RFP Standards for Tanks Containing Regulated Substances (SM-136)?

4. Were the ASRP tanks designed to meet the criteria of the ASRP Design Criteria Package?

If a "No" response is recorded for any of these four questions, ERM will notify EG&G. For the "Yes" responses, ERM will use the Information Review Checklist, which is included as Appendix B, to investigate the specific requirements associated with the design information screening criteria.

3.2.2 Waste Characterization Data Review

The waste characterization data review will include the available analytical data for the waste materials from the 788 Clarifier and the 207 B and C Ponds, chemical-resistance

data for the polyethylene material and the corrosion report section of the ASRP Design Criteria Package. These reviews will be conducted in order to verify that the ASRP tank systems are compatible with the waste materials to be stored in them. The following general screening level criteria will be used to determine if EG&G has met the substantive requirements associated with the waste compatibility of the ASRP tanks:

1. Have the wastes been adequately characterized to determine their physical and chemical characteristics?

2. Were the ASRP tanks designed to resist the corrosion properties of the wastes to be stored in them?

3. Were the ASRP tanks designed to be compatible with the physical properties of the wastes to be stored in them?

If a "No" response is recorded for any of these three questions, ERM will notify EG&G. For the "Yes" responses, ERM will use the Information Review Checklist, which is included as Appendix B, to investigate the specific requirements associated with the waste characterization design information screening criteria.

3.3 Shipping/Installation Inspection

The inspections conducted upon receipt of the material and during its installation are to focus on tank integrity and installation requirements. The following are general questions that should provide a basic screening of the work performed during shipment and installation of the tanks:

1. Were all manufacturer-specified requirements for shipping followed?

2. Were all manufacturer's instructions for off-loading followed?

3. Was the tank foundation constructed in accordance with proper design considerations?

4. Were proper handling procedures followed to prevent tank damage during installation?

5. Are fill nozzles, drain assemblies and other ancillary equipment installed in accordance with design specifications?

6. Do the vents comply with OSHA 1910.106(b)(2)(iv), normal venting for aboveground tanks or another accepted standard?

If a "No" response is recorded for any of the above questions, ERM will notify EG&G. For the "Yes" responses ERM will use the Shipping/Installation Checklists, included as Appendix C, to assist in a detailed inspection of shipping and installation procedures.

3.4 Certifications

If results from the Vendor Site Visit, Information Review and Shipping/Installation Review, are in accordance with Section 100.12(d) of 6 CCR 1007-3, and attest that each tank system has sufficient structural integrity and is acceptable for the storing and treating of hazardous waste as required under Section 265.192 of 6 CCR 1007-3; a qualified, Colorado registered professional engineer with ERM will prepare the tank certifications. The evaluation of each tank system includes an initial certification which covers design, manufacturing, shipping and installation of the primary and secondary tanks, and a final certification package which includes an evaluation of the ancillary equipment. The tank system certification is provided in Appendix D.

4.0 SCHEDULE

A schedule was developed for this project to establish milestones and monitor progress. A Gantt chart can be found in Figure 4-1. The project has been divided into three major events consisting of construction inspections, initial tank certifications, and complete tank certifications. These events are described in the following paragraphs.

Construction inspection will consist of on-site observations beginning on or before December 13, 1993. Qualified personnel will be inspecting equipment before and after installation to ensure its integrity. The inspectors will utilize the checklists located in

Appendix C as a comprehensive guide to perform the equipment evaluations. These inspections are expected to be concluded on or before February 9, 1994.

During this period of inspections the initial certifications will be completed in three separate packages. The tanks will be divided into groups of approximately 29. Each of these tanks will undergo a thorough inspection and will receive an initial certification. Initial certification of the first set of 29 tanks is expected to be complete by January 4, 1994; certification of the second set of tanks is estimated to be complete by January 26, 1994, and certification of the third set of tanks is estimated to be complete by February 9, 1994.

The next major event will be the preparation of complete tank certifications for all tanks. This task will be completed after construction of all ancillary equipment and be comprised of six stages. They include draft preparation, submittal, EG&G review, an informational meeting, final preparation, and final submittal. These items are expected to take approximately one month to complete beginning on February 10, 1994 and ending on March 15, 1994.

The schedule shown in Figure 4-1 is based on the following assumptions. Changes in one or more of these assumptions may result in schedule delays.

- EG&G will begin receiving tanks by December 13, 1993.
- Tanks will arrive and undergo installation at a rate no slower than ten tanks per week.
- All tanks will be installed by February 4, 1993.
- Installation of all ancillary equipment will be complete by February 18, 1993.

5.0 QUALITY ASSURANCE/QUALITY CONTROL

Work performed by ERM will be governed by the EG&G Rocky Flats, Inc. Environmental Restoration (ER) Quality Assurance Project Plan (QAPjP). An

organizational chart describing the positions, responsibilities, and assigned personnel for this project is shown in Figure 5-1. It is expected that technical communications will occur directly between various ERM staff members and EG&G personnel. The program manager is the only individual with the authority to approve change orders or technical variances that affect contract scope, budget or schedule.

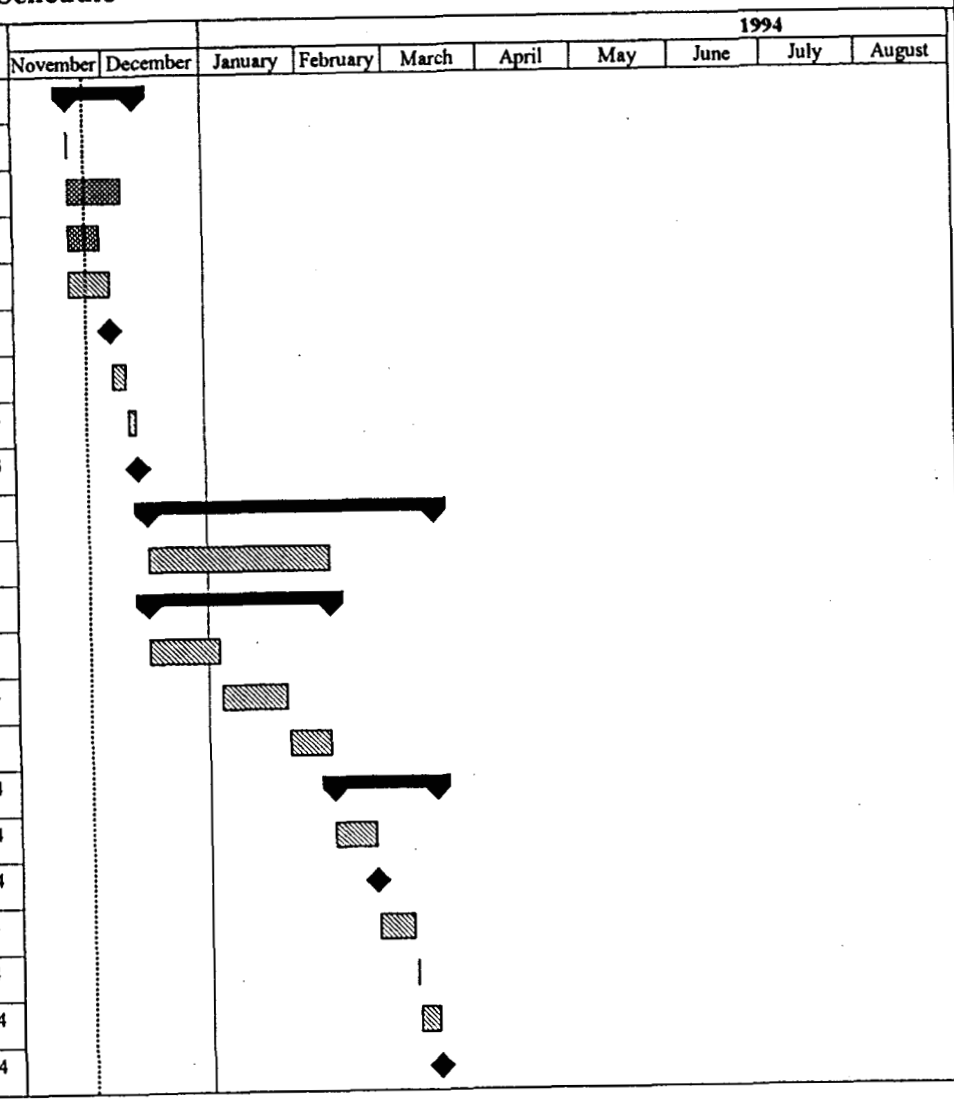
Prior to beginning work, personnel performing technical work shall receive approximately eight hours of training and indoctrination in applicable procedures in accordance with 3-21000-ADM-2.02, to ensure proper understanding of the quality assurance and technical requirements described in this Work Plan. Project personnel will attend EG&G Rocky Flats training for Quality Assurance and technical procedures. All project personnel are responsible for reading, understanding and implementing the requirements contained in the QAPjP. In addition, all personnel are responsible for reading, understanding and implementing the procedures described within this Plan. All personnel performing work in controlled areas are required to have appropriate 40-hour OSHA health and safety training and any additional training as specified in the EG&G Health and Safety Practices manual and the Rocky Flats Plant Environmental Restoration Health and Safety Program Plan. Training requirements will be established for all project personnel and will be documented in the project file.

Included in the certification procedures, project personnel will prepare and verify all calculations following ERM internal procedures for calculation briefs. In addition, text and tables will be prepared and checkprinted by project personnel to ensure consistency and technical accuracy. Project personnel will review the completed checklists in Appendices A, B, and C for consistency and completeness. The tank system will be certified by an independent, qualified, Colorado registered professional engineer with ERM, prepared in accordance with Colorado Hazardous Waste Regulations, 6 CCR 1007-3, Section 265.192.

FIGURE 4-1
ASRP RCRA TANK ASSESSMENT PROJECT SCHEDULE

ASRP Tank Certification
Project Schedule

ID	WBS	Activity	Days	Start	Finish
1	1	Task 1 - Preparation of Tank Certification Plan	14d	11/19/93	12/10/93
2	1.1	Kick-off Meeting	1d	11/19/93	11/19/93
3	1.2	Personnel Training	10d	11/19/93	12/6/93
4	1.3	Review of Tank Drawings and Specifications	5d	11/19/93	11/29/93
5	1.4	Prepare Tank Certification Plan	8d	11/19/93	12/2/93
6	1.5	Submit Draft Tank Certification Plan	0d	12/2/93	12/2/93
7	1.6	EG&G Review of Draft Plan	3d	12/3/93	12/7/93
8	1.7	Incorporate EG&G Comments in Tank Cert. Plan	3d	12/8/93	12/10/93
9	1.8	Submit Final Tank Certification Plan	0d	12/10/93	12/10/93
10	2	Task 2 - Prepare Tank Certifications	64d	12/13/93	3/15/94
11	2.1	Conduct Inspections During Construction	40d	12/13/93	2/9/94
12	2.2	Prepare Initial Certifications	40d	12/13/93	2/9/94
13	2.2.1	Prepare First Package	15d	12/13/93	1/4/94
14	2.2.2	Prepare Second Package	15d	1/5/94	1/26/94
15	2.2.3	Prepare Third Package	10d	1/27/94	2/9/94
16	2.3	Prepare Complete Tank Certification	24d	2/10/94	3/15/94
17	2.3.1	Prepare Draft Complete Tank Certifications	10d	2/10/94	2/23/94
18	2.3.2	Submit Draft Complete Tank Certifications	0d	2/23/94	2/23/94
19	2.3.3	EG&G Review Draft Complete Tank Certifications	8d	2/24/94	3/7/94
20	2.3.4	Complete Draft Tank Certification Meeting	1d	3/8/94	3/8/94
21	2.3.5	Prepare Final Complete Tank Certifications	5d	3/9/94	3/15/94
22	2.3.6	Submit Final Complete Tank Certifications	0d	3/15/94	3/15/94



Project: ASRP Tank Certification
Date: 11/24/93
File: ASRPCERT.MPP

Critical
Noncritical
Progress
Milestone
Summary
Rolled Up

FIGURE 5-1
PROJECT ORGANIZATION

Figure 5-1
Project Organization